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EXAMINER
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ROSSI, JESSICA

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 04/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/768,024

Applicant(s)

HARCOURT, ROBERT

Examiner

Jessica L. Rossi

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 1/24/05, Amendment.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 9, 11, 12, 17, 19, 20, 25-30 and 33-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 12, 17, 19 and 20 is/are allowed.
- 6) ☒ Claim(s) 9, 25-30 and 33-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/30/05
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☒ Other: Webster's Definitions

## **DETAILED ACTION**

### ***Response to Amendment***

1. This action is in response to the amendment dated 1/24/05. Claims 3, 13 and 18 were cancelled. Claims 9, 11-12, 17, 19-20, 25-30 and 33-36 are pending.
2. It is noted that support for the limitations added to claims 30 and 35 can be found in paragraphs 2-3 on p. 11 of the specification.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 19-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 19 it is unclear if the gas supply cup in line 3 is different from that in claim 17. Applicant is asked to clarify. If it is the same gas supply cup, antecedent basis was established in claim 17 and therefore Applicant should amend claim 19 to state --the gas supply cup-- in line 3.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. Claim 25 is rejected under 35 U.S.C. 102(b) as being anticipated by Enomoto (US 5453229; of record).

With respect to claim 25, Enomoto teaches making a hose by feeding a woven cloth 2 (braided reinforcement = woven cloth; see column 6, lines 14 and 21-22 of US 4488921 to Dougherty, of record; see Webster's definitions of cloth, braid, and weave attached to this office action) over a tube located inside mandrel 11 (Figure 2; column 3, lines 25-35). The reference teaches supplying gas through the woven cloth, into the tube and through the mandrel (Figure 2; column 3, lines 50-52; column 5, lines 35-40; note present claim language does not set forth a particular sequence and since tube is within mandrel, which is within woven cloth, the gas passes through/into all three) and extruding rubber onto, into and through the woven cloth forming an unvulcanized rubber hose (Figure 2; column 3, lines 44-49; skilled artisan would have appreciated that the braided reinforcement/woven cloth would have spaces/interstices and therefore the extruded rubber would pass through the spaces/interstices – see column 2, lines 30-35 and 42-43 of US 3627610 to Guelich).

The reference teaches pressurizing the unvulcanized hose with the gas, sealing the inside of the hose with respect to the mandrel, pulling the unvulcanized hose through a heater 32 vulcanizing the hose and sealing the rubber hose as it is removed from the heater (Figure 4; column 4, line 58 – column 5, line 2).

***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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8. Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enomoto as applied to claim 25 above and further in view of Hopkins (US 4121962; of record) and the collective teachings of Gattrugeri (US 3904144; of record) and Kunz et al. (US 6296054; of record).

Regarding claims 26-29, it is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized gas of Enomoto by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

Since Enomoto teaches maintaining a certain pressure within the hose by means of the pressurized gas (column 5, lines 35-36), it would have been obvious to the skilled artisan to measure the outside diameter of the hose upon exit from the heater to determine if the pressure within the hose needed to be increased or decreased to reach the desired pressure of Enomoto

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thereby making it obvious to use the check valve to intermittently supply gas to the hose based on the need to increase/decrease the pressure within the hose.

9. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Enomoto and Hopkins and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 26 above, and further in view of Galloway (US 4155790; of record).

Regarding claim 30, it is known in the art to continuously vulcanize an extruded rubber hose using microwaves as an alternative to a salt bath, as taught by Galloway (Figure 1; column 4, lines 54-60). One reading Enomoto as a whole would have appreciated that the vulcanizing means (salt bath; column 6, lines 28-29) is not critical to the invention and therefore would have been motivated to use microwaves as an alternative to the salt bath because such is known in the art, as taught by Galloway, wherein such allows for vulcanization by means of induction rather than conduction.

10. Claims 9 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enomoto, the collective teachings of Kolnische (UK 922,454; of record) and Merk et al. (US 3038523; of record), Dougherty (US 4488921; of record), Galloway, Hopkins, and the collective teachings of Gattrugeri and Kunz et al.

With respect to claim 9, Enomoto is directed to making a hose. The reference teaches extruding a rubber hose over a mandrel 11, supplying gas through the mandrel and into a cavity formed by the mandrel, hose and a mechanism for clamping the forward end of the hose, trapping the gas inside the hose, and vulcanizing the hose from the outside to the inside by passing it through salt bath 32, as taught by Enomoto (Figures 2 and 4; column 3, lines 36-52; column 4, line 62 – column 5, line 2; column 6, lines 25-30).

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The reference is silent as to intermittently supplying air to and through a check valve located in the mandrel, the clamping mechanism being pinch rollers, trapping air inside the hose and vulcanizing using a non-contact heater.

As for pinch rollers, it is known in the art to make a rubber tube by extruding the rubber tube onto a mandrel, supplying air through the mandrel to the inside of the tube and trapping the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of a vulcanizing means, and vulcanizing the tube from the outside to the inside by passing the same through a heating chamber, as taught by Kolnische (Figure 1; p. 1, lines 44-78). It is also known in the art to continuously vulcanize a hose by trapping pressurized fluid inside the extruded hose by sealing engagement of the hose with the end of a mandrel and pinch rollers 113/114 located downstream of the vulcanizing means, as taught by Merck (see paragraph 9 above for complete discussion).

Therefore, it would have been obvious to the skilled artisan at the time of the invention to trap the gas inside the hose of Enomoto by sealing engagement of the hose with the mandrel of Enomoto and sealing engagement of the hose with pinch rollers located downstream of the vulcanizing means because such is known in the rubber tube extruding art, as taught by Kolnische, wherein pinch rollers prevent the gas from escaping; especially since it is known in the hose making art to trap a substance, which is used to pressurize the hose, within the interior of the hose by sealing engagement of the hose with a mandrel and pinch rollers, as taught by Merck.

As for supplying and trapping air inside the hose, the skilled artisan would have appreciated that air is a gas and therefore would have served as a likely substitute for the inert

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gas supplied and trapped by Enomoto, especially since pressurizing the interior of hose using air is known in the art, as taught by Dougherty (column 8, lines 58-60).

As for a non-contact heater, it is known in the art to continuously vulcanize an extruded rubber hose using microwaves as an alternative to a salt bath, as taught by Galloway (Figure 1; column 4, lines 54-60). One reading Enomoto as a whole would have appreciated that the vulcanizing means is not critical to the invention and therefore would have been motivated to use microwaves as an alternative to the salt bath because such is known in the art, as taught by Galloway, wherein such allows for vulcanization by means of induction rather than conduction.

As for a check valve, it is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized gas of Enomoto by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

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As for intermittently supplying the air, Enomoto teaches maintaining a certain pressure within the hose by means of the pressurized gas (column 5, lines 35-36). Therefore, it would have been obvious to the skilled artisan to determine if the pressure within the hose needed to be increased or decreased to reach the desired pressure of Enomoto thereby making it obvious to use the check valve to intermittently supply gas to the hose based on the need to increase/decrease the pressure within the hose.

With respect to claim 33, all the limitations were addressed above with respect to claim 9 except the process for making the hose being continuous. Enomoto teaches such.

Regarding claim 34, all the limitations were addressed above with respect to 9.

Regarding claim 35, all the limitations were addressed above with respect to claim 9.

Regarding claim 36, the skilled artisan would have appreciated that the gas inside the hose would control the diameter of the hose.

11. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Enomoto, the collective teachings of Kolnische and Merk et al., Dougherty, Galloway, Hopkins, and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 33 above, and further in view of Satzler (US 4490316; of record).

Regarding claim 36, if it is not taken that the gas inside the hose controls the diameter thereof, it would have been obvious to control the diameter of the hose by means of the check valve because this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto. However, it would also have been obvious to the skilled artisan to control the diameter of the hose by controlling the speed of extrusion because

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such is known in the art, as taught by Satzler (Figure 1; column 1, lines 9-10; column 2, lines 1-11 and 55-60), where this allows the final diameter of the hose to be predetermined.

12. Claims 9 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merck et al. in view of Dougherty, Hopkins and the collective teachings of Gattrugeri and Kunz et al.

With respect to claim 9, Merck is directed to making a hose. The reference teaches pressurizing an extruded rubber hose 17 by supplying pressurized fluid to and through a tube 71 located inside mandrel 16 and into a cavity formed by the mandrel, hose and pinch rollers 113/114 (Figure 1; column 2, lines 50-51; column 5, lines 1-27), trapping the pressurized fluid inside the hose (Figure 1a; column 5, lines 2-27 and 47-48), and vulcanizing the hose from the outside to the inside using a heated curing tube 115 having a jacket through which heated oil circulates (note that tube 115 is identical to tube 33; column 5, lines 45-47; column 3, lines 9-12).

The reference is silent as to intermittently supplying air to and through a check valve located in the mandrel, trapping air inside the hose and vulcanizing using a non-contact heater.

It is known in the art to make a hose by trapping pressurized air or fluid inside the hose during vulcanization by sealing both ends of the hose, as taught by Dougherty (column 8, lines 59-62). One reading the Merck reference as a whole would have appreciated that the means for pressurizing the hose is not critical to the invention and therefore would have been motivated to use air as an alternative to fluid because such is known in the art, as taught by Dougherty, where only the expected results of maintaining the shape of the hose during vulcanization would have been achieved.

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It is known in the art to vulcanize a hose having pressurized fluid or air trapped within by passing the hose through a chamber in which various alternative methods, including hot liquid and microwaves, are used to vulcanize the hose, as taught by Dougherty (column 8, lines 59-63), wherein the skilled artisan would have appreciated that microwaves constitute a non-contact heater.

One reading the Merck reference as a whole would have appreciated that the means for vulcanizing the hose is not critical to the invention and therefore would have been motivated to vulcanize the hose of Merck by passing the same through a microwave chamber as an alternative to the heated tube 115 because such is known in the art, as taught by Dougherty, wherein only the expected results of vulcanizing the hose would have been achieved. Please note that the present invention discloses a microwave heater as a non-contact heater (p. 11, lines 4-7).

As for a check valve, it is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized air of Merck in view of Dougherty by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of

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pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

As for intermittently supplying the air, it would have been obvious to the skilled artisan to determine if the pressure within the hose needed to be increased or decreased to reach a desired pressure within the hose of Merk thereby making it obvious to use the check valve to intermittently supply gas to the hose based on the need to increase/decrease the pressure within the hose.

With respect to claim 33, all the limitations were addressed above with respect to claim 9 except the process for making the hose being continuous. Merk teaches such.

Regarding claim 34, all the limitations were addressed above with respect to 9.

Regarding claim 35, all the limitations were addressed above with respect to claim 9.

Regarding claim 36, the skilled artisan would have appreciated that the gas inside the hose would control the diameter of the hose.

13. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merk et al. in view of Dougherty, Hopkins and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 33 above, and further in view of Satzler.

Regarding claim 36, if it is not taken that the air inside the hose controls the diameter thereof, it would have been obvious to control the diameter of the hose by means of the check valve because this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto. However, it would also have been obvious to the skilled artisan to control the diameter of the hose by controlling the speed of extrusion because

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such is known in the art, as taught by Satzler (Figure 1; column 1, lines 9-10; column 2, lines 1-11 and 55-60), where this allows the final diameter of the hose to be predetermined.

14. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merk et al. in view of Dougherty.

With respect to claim 25, Merk in view of Dougherty, as set forth in paragraph 12 above, teaches making a hose by feeding a woven cloth 68 (braided reinforcement = woven cloth; see column 6, lines 14 and 21-22 of US 4488921 to Dougherty, of record; see Webster's definitions of cloth, braid, and weave attached to this office action) over a tube 71 located inside mandrel 16 (Figure 2; column 5, lines 1-15). Merk in view of Dougherty teaches supplying gas through the woven cloth, into the tube and through the mandrel (note present claim language does not set forth a particular sequence and since tube is within mandrel, which is within cloth, the gas passes through/into all three) and extruding rubber onto, into and through the woven cloth forming an unvulcanized rubber hose (Figure 8; column 4, lines 30-33; skilled artisan would have appreciated that the braided reinforcement/woven cloth would have spaces/interstices and therefore the extruded rubber would pass through the spaces/interstices – see column 2, lines 30-35 and 42-43 of US 3627610 to Guelich).

The references teach pressurizing the unvulcanized hose with the gas, sealing the inside of the hose with respect to the mandrel, pulling the unvulcanized hose through a heater 115, vulcanizing the hose and sealing the rubber hose as it is removed from the heater (Figure 1; column 5, lines 28-50).

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15. Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merk et al. and Dougherty as applied to claim 25 above, and further in view of Hopkins and the collective teachings of Gattrugeri and Kunz et al.

Regarding claims 26-29, it is known in the art to trap pressurized gas inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the gas, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized gas through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized gas of Merk in view of Dougherty by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized gas within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized gas therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

Since Merk in view of Dougherty teaches maintaining a certain pressure within the hose by means of the pressurized gas (Merk, column 5, lines 27-28), it would have been obvious to the skilled artisan to measure the outside diameter of the hose upon exit from the heater to determine if the pressure within the hose needed to be increased or decreased to reach the desired

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pressure of Merk thereby making it obvious to use the check valve to intermittently supply gas to the hose based on the need to increase/decrease the pressure within the hose.

Regarding claim 30, Merk teaches the heater 115 being a tube heated by hot oil that circulates through a jacket (column 3, lines 10-12). One reading the reference as a whole would have appreciated that the means for heating the tube is not critical to the invention and therefore would have been motivated to use other heating means, such as steam, as an alternative to heated oil.

However, the examiner appreciates that Applicant's invention is directed to a non-contact heater and therefore, Merk in view of Dougherty teaches a microwave heater, as set forth in paragraph 12 above.

16. Claims 9 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arterburn (US 4361455; of record) in view of the collective teachings of Kolnische and Enomoto, Hopkins and the collective teachings of Gattrugeri and Kunz et al.

With respect to claim 3, Arterburn is directed to making a hose. The reference teaches extruding a rubber tube 12 from an extruder 24, applying reinforcement (braided, knit etc.; column 2, lines 31-32) to the tube, extruding an outer sheath over the reinforced tube, and vulcanizing the reinforced tube from the outside to the inside at zone 36 using microwave heating (= non-contact heater) to form the hose (Figure 2; column 2, lines 22-27 and 33-55).

The reference is silent as to pressurizing the extruded rubber tube by intermittently supplying air to and through a check valve located in a mandrel and into a cavity formed by the check valve, mandrel, hose and pinch rollers and trapping air inside the tube.

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It is known in the art to make a rubber tube by extruding the rubber tube over a mandrel, supplying air through the mandrel to the inside of the tube and trapping the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of a vulcanizing means, and vulcanizing the tube from the outside to the inside by passing the same through a heating chamber, as taught by Kolnische (Figure 1; p. 1, lines 44-78).

It is also known in the art to make a rubber hose by extruding a rubber tube over a mandrel, supplying gas through the mandrel to the inside of the tube and trapping the gas inside the tube, applying reinforcement to the tube by means of a braider, extruding an outer sheath over the reinforced tube, and vulcanizing the reinforced tube to form the hose, as taught by Enomoto (Figures 2 and 4; column 3, lines 36-52; column 4, line 62 – column 5, line 2).

Therefore, it would have been obvious to the skilled artisan at the time the invention was made to pressurize the extruded rubber tube of Arterburn by supplying air through a mandrel over which the tube is extruded and trap the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of the vulcanizing zone because such is known in the rubber tube extruding art, as taught by Kolnische, wherein the air would prevent the tube from collapsing during processing steps prior to vulcanization; especially since it is known in the hose making art to pressurize an extruded hose by keeping a gaseous fluid trapped inside the hose during formation thereof, as taught by Enomoto.

As for a check valve, it is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check

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valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized air of Arterburn in view of the collective teachings of Kilnishe and Enomoto by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

As for intermittently supplying the air, it would have been obvious to the skilled artisan to determine if the pressure within the hose needed to be increased or decreased to reach a desired pressure within the hose of Arterburn thereby making it obvious to use the check valve to intermittently supply gas to the hose based on the need to increase/decrease the pressure within the hose.

With respect to claim 33, all the limitations were addressed above with respect to claim 9 except the process for making the hose being continuous. Arterburn teaches such.

Regarding claim 34, all the limitations were addressed above with respect to 9.

Regarding claim 35, all the limitations were addressed above with respect to claim 9.

Regarding claim 36, the skilled artisan would have appreciated that the gas inside the hose would control the diameter of the hose.

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17. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arterburn, the collective teachings of Kolnische and Enomoto, Hopkins and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 26 above, and further in view of Satzler.

Regarding claim 36, if it is not taken that the air inside the hose controls the diameter thereof, it would have been obvious to control the diameter of the hose by means of the check valve because this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto. However, it would also have been obvious to the skilled artisan to control the diameter of the hose by controlling the speed of extrusion because such is known in the art, as taught by Satzler (Figure 1; column 1, lines 9-10; column 2, lines 1-11 and 55-60), where this allows the final diameter of the hose to be predetermined.

18. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arterburn in view of the collective teachings of Kolnische and Enomoto.

With respect to claim 25, all the limitations were addressed in paragraph 16 above with respect to claim 9, except the reinforcement being woven cloth and feeding the woven cloth over a tube and the mandrel, supplying the gas through the woven cloth, into the tube and through the mandrel and extruding the rubber onto, into and through the woven cloth.

As for the reinforcement being woven cloth, Arterburn teaches the reinforcement can be braided, knit, etc. (column 2, lines 27-32) wherein the skilled artisan would have appreciated such being woven cloth (see Webster's definitions of cloth, braid, and weave attached to this office action).

As for feeding the woven cloth over a tube and the mandrel, such would have been obvious since it is known in the art to feed reinforcement over a mandrel having a tube within

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where air/gas is fed into the tube to pressurize and therefore support the unvulcanized hose once it is removed from the mandrel, as taught by Enomoto (Figure 2). Therefore, Arterburn in view of Kolnishe and Enomoto now teach supplying gas through the woven cloth, into a tube and through the mandrel (note present claim language does not set forth a particular sequence and since tube is within mandrel, which is within woven cloth, the gas passes through/into all three).

As for extruding rubber onto, into and through the woven cloth, the skilled artisan would have appreciated that the woven cloth would have spaces/interstices and therefore the extruded rubber would pass through the spaces/interstices – see column 2, lines 30-35 and 42-43 of US 3627610 to Guelich.

19. Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arterburn and the collective teachings of Kolnishe and Enomoto as applied to claim 25 above, and further in view of Hopkins and the collective teachings of Gattrugeri and Kunz et al.

Regarding claims 26-29, it is known in the art to trap pressurized gas inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the gas, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized gas through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized gas of Arterburn in view of the collective teachings of Kolnishe and Enomoto by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized gas within the interior of a hose during

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vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized gas therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

Since Arterburn in view of Kolnishe and Enomoto teaches maintaining a certain pressure within the hose by means of the pressurized gas (Enomoto; column 5, lines 35-38), it would have been obvious to the skilled artisan to measure the outside diameter of the hose upon exit from the heater to determine if the pressure within the hose needed to be increased or decreased to reach the desired pressure thereby making it obvious to use the check valve to intermittently supply gas to the hose based on the need to increase/decrease the pressure within the hose.

Regarding claim 30, Arterburn teaches a steam heater, microwave heater, etc. (column 2, lines 52-55).

20. Claims 9 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satzler (US 4517039; of record) in view of Galloway, the collective teachings of Kolnishe and Enomoto, Hopkins and the collective teachings of Gattrugeri and Kunz et al.

With respect to claim 9, Satzler is directed to making a hose. The reference teaches extruding a rubber hose over a mandrel 50 such that the hose forms a seal as it exits the mandrel, tensioning and sealing the hose as it is drawn through pinch rollers 78 by a haul-off 84, and vulcanizing the hose intermediate the mandrel and the pinch rollers by passing the hose through a salt bath 30 (Figure 1; column 3, lines 5-17; column 4, lines 7-8 and 19-20 and 25).

The reference is silent as to pressurizing the extruded rubber hose by intermittently supplying air to and through a check valve located in a mandrel and into a cavity formed by the

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check valve, mandrel, hose and pinch rollers, trapping air inside the tube and vulcanizing using a non-contact heater.

As for supplying and trapping air, it is known in the art to make a rubber tube by extruding the rubber tube over a mandrel, supplying air through the mandrel to the inside of the tube and trapping the air inside the tube by sealing engagement of the tube with the mandrel and pinch rollers located downstream of a vulcanizing means, and vulcanizing the tube from the outside to the inside by passing the same through a heating chamber, as taught by Kolnische (Figure 1; p. 1, lines 44-78).

It is also known in the art to make a rubber hose by extruding a rubber tube over a mandrel, supplying gas through the mandrel to the inside of the tube and trapping the gas inside the tube, applying reinforcement to the tube by means of a braider, extruding an outer sheath over the reinforced tube, and vulcanizing the reinforced tube to form the hose, as taught by Enomoto (Figures 2 and 4; column 3, lines 36-52; column 4, line 62 – column 5, line 2).

Therefore, it would have been obvious to the skilled artisan at the time the invention was made to pressurize the extruded rubber hose of Satzler by supplying air through the mandrel of Satzler over which the hose is extruded wherein the skilled artisan would have appreciated the air being trapped inside the hose by sealing engagement of the hose with the mandrel and pinch rollers of Satzler because such is known in the rubber tube extruding art, as taught by Kolnische, wherein the air would prevent the tube from collapsing during processing steps prior to vulcanization; especially since it is known in the hose making art to pressurize an extruded hose by keeping a gaseous fluid trapped inside the hose during formation thereof, as taught by Enomoto.

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As for vulcanizing using a non-contact heater, it is known in the art to continuously vulcanize an extruded rubber hose using microwaves as an alternative to a salt bath, as taught by Galloway (Figure 1; column 4, lines 54-60). One reading Satlzer as a whole would have appreciated that the vulcanizing means is not critical to the invention (column 5, lines 16-17 – teaches “other types” of vulcanizing means could be used) and therefore would have been motivated to use microwaves as an alternative to the salt bath because such is known in the art, as taught by Galloway, wherein such allows for vulcanization by means of induction rather than conduction.

As for a check valve, it is known in the art to trap pressurized air inside a hose during vulcanization thereof where air is supplied from a source 33 equipped with a valve 34 for regulating the flow of the air, as taught by Hopkins (Figure 3; column 3, lines 22-30 and 38-42). It is also known to regulate the flow of pressurized air through a mandrel by means of a check valve located within the mandrel, as taught by the collective teachings of Gattrugeri (abstract) and Kunz (column 9, lines 1-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the flow of the pressurized gas of Satlzer in view of the collective teachings of Kolnishe and Enomoto by placing a check valve within the mandrel because it is known to use a valve to regulate the flow of pressurized air within the interior of a hose during vulcanization, as taught by Hopkins, and because it is known to use a check valve located within a mandrel to regulate the flow of pressurized air therethrough, as taught by the collective teachings of Gattrugeri and Kunz, where this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto.

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As for intermittently supplying the air, Enomoto teaches maintaining a certain pressure within the hose by means of the pressurized gas (column 5, lines 35-36). Therefore, it would have been obvious to the skilled artisan to determine if the pressure within the hose needed to be increased or decreased to reach the desired pressure thereby making it obvious to use the check valve to intermittently supply gas to the hose based on the need to increase/decrease the pressure within the hose.

With respect to claim 33, all the limitations were addressed above with respect to claim 9 except the process for making the hose being continuous. Satzler teaches such.

Regarding claim 34, all the limitations were addressed above with respect to 9.

Regarding claim 35, all the limitations were addressed above with respect to claim 9.

Regarding claim 36, the skilled artisan would have appreciated that the gas inside the hose would control the diameter of the hose.

21. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Satzler, Galloway, the collective teachings of Kolnishe and Enomoto, Hopkins and the collective teachings of Gattrugeri and Kunz et al. as applied to claim 33 above, and further in view of Satzler '316.

Regarding claim 36, if it is not taken that the gas inside the hose controls the diameter thereof, it would have been obvious to control the diameter of the hose by means of the check valve because this would prevent too much or too little air from being supplied to the interior of the hose thereby preventing damage thereto. However, it would also have been obvious to the skilled artisan to control the diameter of the hose by controlling the speed of extrusion because

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such is known in the art, as taught by Satzler (Figure 1; column 1, lines 9-10; column 2, lines 1-11 and 55-60), where this allows the final diameter of the hose to be predetermined.

***Allowable Subject Matter***

22. Claims 11-12, 17 and 19-20 are allowed.

With respect to claim 11, Applicant amended this claim to include the limitations of claim 13 that were indicated as allowable in paragraph 12 of the office action dated 7/8/03.

With respect to claim 17, the prior art fails to teach or suggest supplying the gas through a gas supply cup.

***Response to Arguments***

23. Applicant's arguments filed 1/24/05 have been fully considered but they are not persuasive.

24. On pages 10-11 of the arguments, Applicant argues that the applied references fail to teach intermittently supplying the air/gas. The Examiner invites Applicant to reread the rejections set forth with respect to claims 9 and 33.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jessica L. Rossi** whose telephone number is **571-272-1223**. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine R. Copenheaver can be reached on 571-272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Jessica L. Rossi  
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